

Claims

1. Catheter device (2) for transcutaneous or subcutaneous administration of substances to a patient, comprising an outer catheter (4) provided with one outer catheter lumen (6) with a distal outer catheter outflow opening (8) and an inner catheter (10) provided with at least one inner catheter lumen (12) with at least one distal inner catheter outflow opening (14), said inner catheter is adapted to be detachably arranged in said outer catheter lumen, characterized in that when the catheter device is adapted to be used for administration of substances to a patient, said inner catheter outflow opening is located proximally said outer catheter outflow opening, and that said substance is administered as a pulsed flow sequence of substance comprising a predetermined number of liquid pulses, wherein each liquid pulse is a predetermined volume of the substance.
- 15 2. Catheter device according to claim 1, characterized in that said inner catheter is coaxially arranged with regard to said outer catheter.
3. Catheter device according to claim 1, characterized in that at least one substance is active, such as a hormone, e.g. insulin, a peptide, an anti-thrombolytic agent or any other pharmaceutical preparation for therapeutic or diagnostic use.
- 25 4. Catheter device according to claim 3, characterized in that said active substance is administered by said inner catheter.
5. Catheter device according to claim 1, characterized in that outer and inner catheters comprise at their respective proximal ends first connection means (24) for connection to an external pump device having one or more reservoirs for substances and flushing liquids.
- 30 6. Catheter device according to claim 1, characterized in that said device is provided with a second connector means (26) making it possible to detach said inner catheter and replace it.
- 35 7. Catheter device according to claim 6, characterized in that

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said second connector means is partly integrated in a Y-connection.

8. Catheter device according to claim 7, characterized in that said second connector means includes a first fastening means (28) at the proximal end of said inner catheter adapted to co-operate with a second fastening means (30) integrated with an opening in the outer catheter wall such that when said first and second fastening means are attached to each other the catheter is in a substance administration state.

10 9. Catheter device according to claim 8, characterized in that during a replacement procedure the first fastening means is detached from said second fastening means and the inner catheter is withdrawn out through said opening in the outer catheter wall and a new inner catheter may be inserted through said opening.

15 10. Catheter device according to claim 9, characterized in that the positions of said first and second fastening means ensure that a predetermined volume is obtained in the distal end of the outer catheter.

20 11. Catheter device according to claim 1, characterized in that said outer catheter is adapted to administer a flushing liquid.

12. Catheter device according to claim 1, characterized in that the inner catheter comprises two lumen.

25 13. Catheter device according to claim 1, characterized in that each lumen in the inner catheter administers an active substance.

30 14. Catheter device according to claim 1, characterized in that all surfaces in contact with the active substance in the catheter device are made of or covered by tetrafluoro polyethylene (Teflon®).

35 15. Catheter device according to claim 1, characterized in that the volume of a liquid pulse of the substance is approximately the same as the volume defined in said outer catheter lumen between the inner catheter outflow

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opening and the outer catheter outflow opening.

16. Catheter device according to claim 1, characterized in that a liquid pulse of the active substance through the inner catheter lumen is followed in time sequence by a liquid pulse of a flushing liquid applied through the outer catheter lumen, in order to make the active substance reach the target area of administration.

17. Infusion system comprising a catheter device according to any of claims 1-16 and an external pump device including a pumping means, reservoir means and a control means.

18. Infusion system according to claim 17, characterized in that said control means controls the pumping means such that a preset sequence of liquid pulses to be dispensed by said inner and outer catheters is obtained.